Testing the Convergence of Hispanic Headship Rates: The Case of Southern California

(draft on 12/31/07)

By

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Paper presented at the 47th Annual Meeting of the Western Regional Science Association (WRSA), The Big Island, Hawaii, February 17-20, 2008.

Abstract

This study tests if there is the convergence of headship rates between White and Hispanic population in the Southern California region during the period of 1980 and 2000. Using Integrated Public Use Microdata Series (IPUMS) of the decennial census, the changing gap of the White and Hispanic headship rates is measured for each census year, over time, and across generations in order to test a linear assimilation theory. The study finds that the gap of the White and Hispanic headship rates were generally growing over time and across generations, after controlling for socioeconomic factors. In particular, Hispanic immigrants experience a linear assimilation toward the Non-Hispanic white headship rates over time, while U.S. born Hispanic residents do not show a linear assimilation toward the Non-Hispanic white headship rates. The findings from the study partly support the linear assimilation theory. The changing pattern of the headship rates of Hispanic immigrants might be fully explained by the linear assimilation theory. But, the increasing gap in the U.S. born Hispanic headship rates and the Non-Hispanic headship rates might be partly explained by familism theory. The extended family tradition plays a key role in familism theory, and might account for the lower headship rates of the U.S. born Hispanic population. The regional assimilation pattern is not simply location specific but a national experience. The changing pattern of headship rates of Hispanic population by nativity and the length of stay has important implications for projecting Hispanic households. The new approach, which requires projection of Hispanic population and headship rates by nativity and the length of stay, might develop more accurate projections of Hispanic households by immigration status, but might result in more uncertainties due to the increased number of projection variables.

Keywords: Convergence, Assimilation, Hispanic, Headship Rates, Household Projection, Southern California

Introduction

Headship rates are the proportion of people in a particular category (e.g., age-sex-race/ethnicity), who are counted as heads of households. The headship rates method has been widely used to project households in the World. The major advantage is its simplicity and easiness. US Census also used the headship rates method to project US households. This method also has some weakness. This method does not incorporate the changes in demographic processes: decrease in fertility rates; delay in marriage; increase in divorce rates; increase or decrease of immigrants, etc.

The age-sex-racial/ethnic specific headship rates are sometimes assumed to remain constant during the forecast horizon. This constant headship rate assumption is justified for one major reason: uncertain direction and size of future changes. The constant headship rate assumptions, however, are questioned for neglecting the overall convergence of Hispanic headship rates toward the White headship rates.

According to the prominent linear assimilation theory, Hispanic population, who immigrated to the U.S. will increase their headship rates until they reach the white headship rates over time due to assimilation. As a result, the gap in the headship rates between white and Hispanic population will get smaller. The assimilation process is completed over a longer period of time.

This study tests if there is the convergence of headship rates between White and Hispanic population in the Southern California region during the period of 1980 and 2000. Using Integrated Public Use Microdata Series (IPUMS) of the decennial census, the changing gap of the White and Hispanic headship rates is measured for each census year, over time, and across generations in order to test a linear assimilation theory. A binary logistic regression model is used to test the convergence, after controlling for significant socioeconomic factors.

Recent Trends in White and Hispanic Headship Rates

According to the IPUMS of the decennial census, the Southern California region shows a continuous decline in headship rates of white and Hispanic population over the last 20 years (See Table 1). The region's headship rates dropped 0.04 from 0.48 in 1980 to 0.44 in 2000. The national average headship rates, however, increased by 0.02 from 0.46 in 1980 to 0.48 in 2000. The White headship rate increased by 0.02 from 0.51 in 1980 to 0.53 in 2000, while the Hispanic headship rate declined by 0.04 from 0.39 in 1980 to 0.35 in 2000. As a result, the gap between White and Hispanic headship rates increased from 0.11 in 1980 to 0.18 in 2000. The big gap in headship rates between whites and Hispanic group occurred in the 1980s. The gap continued to increase during the 1990s, but by a small margin.

Table 1. White and Hispanic Headship Rates, Southern California, 1980-2000

	1980	1990	2000	Change in headship rates	
				80-90	90-00
NH White + Hispanic (1)	0.4802	0.4520	0.4424	-0.0282	-0.0096
NH White (2)	0.5079	0.5145	0.5261	0.0066	0.0116
Hispanic (3)	0.3943	0.3388	0.3465	-0.0555	0.0078
Difference ((2)-(3))	0.1136	0.1757	0.1796	0.0621	0.0038

Source: Author's calculations using the Integrated Public Use Microdata Series (IPUMS), 2004. Note: Weighted to population levels using person weights from the 1980, 1990, and 2000 US Census.

The major reason for the decline in the regional headship rates is the lower Hispanic headship. Hispanic headship rates declined by 0.05 from 0.39 in 1980 to 0.34 in 2000. However, the White group continued to increase headship rates by 0.02 from 0.51 in 1980 to 0.53 in 2000. The aging of the White population might have contributed to the increase of the overall White headship rates during the same period. When compared with the White headship rates, Hispanic groups generally show lower headship rates over time. White and Hispanic population showed a consistently increasing gap of headship rates over time.

If we look into Hispanic headship rates by nativity, we will see a different pattern of the difference from the white headship rates (See Table 2). The increasing gap typically applied to U.S. born Hispanic population. The difference in headship rates between White population and U.S. born Hispanic population has continued to increase from 0.12 in 1980 to 0.17 in 1990, to 0.22 in 2000. However, headship rates of foreign born Hispanic population showed a slightly different changing pattern of the gap in the headship rates between the white population and foreign born Hispanic population. The difference in headship rates between White population and foreign born Hispanic population increased by 0.07 from 0.11 in 1980 to 0.18 in 1990, and decreased by 0.02 to 0.16 in 2000.

Table 2. Hispanic Headship Rates by Nativity and the Length of Period, Southern California, 1980-2000

	1980	1990	2000	Change in %	
				80-90	90-00
Hispanic US Born	0.3926	0.3494	0.3107	-0.0432	-0.0387
Hispanic Foreign Born	0.3960	0.3338	0.3665	-0.0622	0.0328
Hispanic10less	0.3247	0.2307	0.2022	-0.0940	-0.0285
Hispanic 11-20	0.4529	0.3903	0.4015	-0.0626	0.0112
Hispanic 20+	0.5711	0.5220	0.4895	-0.0491	-0.0325

Source: Author's calculations using the Integrated Public Use Microdata Series (IPUMS), 2004. Note: Weighted to population levels using person weights from the 1980, 1990, and 2000 US Census

In sum, the regional headship rates of the Hispanic population generally do not converge toward the White headship rates between 1980 and 2000. Although Hispanic immigrants show a converging pattern of their headship rates toward the non-Hispanic white headship rates over time, U.S. born Hispanic population continue to be significantly lower than the White headship rates and show an increasing gap in headship rates over time. This pattern in the racial and ethnic gap in headship rates may partly support the linear assimilation theory.

Implication for Household Projections

Household projection plays a key role in determining the future housing needs, which are bases for developing a strategy to provide affordable housing units. The projected households at a future point in time are computed by multiplying the projected population by the projected headship rate. The headship rate is the proportion of a population cohort that forms the household. Headship rates are not uniformly developed across diverse peoples in different locations. California Department of Housing and Community Development (2000) reports the variations of the headship rates by demographic and residential characteristics,

> "Headship rates vary by age—they tend to rise as people age; by gender—men have historically had higher headship rates than women; and by race and ethnicity- Whites generally have higher headship rates than non-white Hispanics and Asians of similar age. Headship rates change over time, but not always in predictable directions. Headship rates also vary by location. They tend to be higher in metropolitan areas and lower in rural ones."

To accommodate these possible variations, the headship rate is projected for a population of different age, sex, race/ethnicity, and location. A headship rate of 0.5 means that a population of 1000 adult persons will form 500 households. The headship rate method is currently the most widely used method of household projection. The headship rate method has advantage of being simple and operational, and requires minimal data (Plane & Rogerson, 1994).

The future headship rates are developed using four categories of techniques: trend extrapolation, cohort approach, regression, normative approach (Kim, 2001; Kono, 1987; United Nations, 1973 & 1993; Myers et al, 2002; California Department of Housing and Community Development, 2000). The first two approaches are widely used and briefly discussed here. The extrapolation methods are characterized by the assumption that future headship rate is determined by its past trends. There are many ways of measuring the past trends and project them into the future. They include judgmental extrapolation, curve fitting, log regression, linear regression and time series analysis (Kim, 2001). The constant headship rate can be classified as one of trend extrapolation methods. The cohort approach allows the generational differences in headship rate to carry forward, while allowing for normal life-course changes as each generation ages (Myers et al, 2002). The cohort approach is found useful when changes in headship rates are rapid among the young population and when the size of a certain cohort is quite different from the

adjacent cohorts immediately before and after, as embodied in the post-war baby boomers (Kim, 2001; United Nations, 1993).

The race/ethnicity becomes an important demographic element in understanding the past and current overall headship rate and in projecting the future headship rate because of the race/ethnic gap in the headship rate. The race/ethnicity becomes more important as the size of minority population is getting bigger in selected regions. As of July 1, 2007, there is no racial or ethnic majority in the Southern California region, comprising of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties. The region is ethnically diverse. Hispanics comprises 44 percent of the Region's population, followed by Non-Hispanic (NH) Whites at 36 percent, NH Asians and Others at 13 percent, and NH Blacks at 7 percent. Compared to the 2000 US Census, Hispanics increased its share of the population by 3 percent, while NH Whites decreased its share by 3 percent. There is little change in the share of other race/ethnic groups between 2000 and 2007. It is widely accepted that the Hispanic population will become the majority ethnic group in next two decades (California Department of Finance, 2007; Southern California Association of Governments, 2007).

In addition to the increasing Hispanic share of total population, the Hispanic headship rate assumption plays a key role in determining the future household projections. The Hispanic headship rate assumptions could be derived using extrapolation method, cohort method, or the current rate (California Department of Housing and Community Development, 2000). An important consideration is the past, current, and future racial and ethnic gap in the headship rate between the White and the Hispanic population.

The relatively lower household formation of the Hispanic population and an increasing racial and ethnic gap might be related to diverse factors including demographic, income, housing cost, residential location, or immigration status. Assimilation process would have played an important role in determining the headship rate. The consideration of race/ethnic specific headship rate in developing the race/ethnic households in the future allows us to incorporate "assimilation assumption" of the Hispanic headship rate over time. If the Hispanic group shows a complete assimilation of their headship rate to the White group during the next several decades, the projected Hispanic headship rate should be properly adjusted upward during the projection period. With no assimilation of the Hispanic headship rate to the White group during the same period, the projected Hispanic headship rate might not be diverging from the recent and current ethnic difference in the headship rate.

The simple sensitivity of the Hispanic household projections with different assimilation assumptions is shown in table 3. Using the year 1980 as a base year and 2000 as a target year, we may estimate the impacts of the changing assimilation assumption on the projection of Hispanic households in Southern California region. The net growth of the Hispanic population of 15 years or older between 1980 and 2000 was 2.7 millions. The White headship rate by age and the age composition of the Hispanic population in 1980 is assumed to remain unchanged. In 1980, the Hispanic headship rate by age is consistently lower than the White headship rate by age. The gap in the age specific headship rate

between the White and Hispanic population ranges from 0.03 to 0.08, with a large gap for the old householders of 65 years old or more. The old Hispanic population has a less probability to become a householder than the old White population. The gap in the overall headship rate between the White and Hispanic population is around 0.11 in 1980. (See Table 3).

The result of the sensitivity analysis indicates that no assimilation assumption would result in projection of approximately 1.9 million Hispanic households. 1.2 million households are needed to accommodate the growing Hispanic population between 1980 and 2000. The complete assimilation of the Hispanic headship rate would project nearly 200,000 Hispanic households more than no assimilation assumption. This additional increase of Hispanic households accounts for 10% of household projections with no assimilation assumption. With the complete assimilation assumption, the younger Hispanic households, whose householders are 35 years old or less, tend to form more households, and account for approximately 74% of additional Hispanic households. They have less probability to live with their parents, siblings, and other relatives relative to no assimilation assumption. The complete assimilation assumption would have a different implication for the future household projections and housing supply strategy than that of no assimilation assumption. With a complete assimilation assumption, developers and city planners might need to plan for more housing units and of specific type (e.g., apartments for younger households) to accommodate projected households and their housing needs.

Table 3. Hispanic household projections with complete/no assimilation assumption

	Headship Rate(1980)		Hispanic Households			
Age	White	Hispanic	1980	2000 (1) (With No Assimilation)	2000 (2) (With Complete Assimilation)	Difference ((1)-(2))
15-24	0.1739	0.1463	90,600	172,974	205,573	32,599
25-34	0.5198	0.4668	238,840	575,745	641,060	65,315
35-44	0.5790	0.5295	154,120	534,660	584,559	49,899
45-54	0.5841	0.5489	113,560	310,823	330,747	19,923
55-64	0.5964	0.5618	70,720	157,709	167,416	9,707
65-74	0.6400	0.5630	36,480	97,270	110,581	13,311
75+	0.6235	0.5459	18,800	56,990	65,094	8,104
Total	0.4956	0.3901	723,120	1,906,173	2,105,030	198,857

Source: Author's calculations using the Integrated Public Use Microdata Series (IPUMS), 2004.

The sensitivity analysis, however, does not depict the actual trends in Hispanic headship rates and households between 1980 and 2000. The overall Hispanic headship rates in 2000 were actually much lower than those in 1980. The actual number of Hispanic households in 2000 was 1.56 millions, which were 350,000 lower than the number of households using 1980 Hispanic headship rates with no assimilation assumption. The changing Hispanic headship rates and age composition contributed to lower household projections.

Three Perspectives of Assimilation Process

How would assimilation process have played a role in determining the headship rate? Three different perspectives are available as a way to understand the assimilation process. They are linear assimilation, segmented assimilation, and familism (Wildsmith, 2001). The linear assimilation, as a traditional assimilation theory, interprets the process of assimilation as a linear process of becoming similar to the dominant ethnic group (Chun, 2007; Wildsmith, 2001; Rumbaut Ruben G., 1997; Gordon, 1964).

The minority group experiences the assimilation through the following seven dimensions: culture, structure, marriage, identification, attitude reception, behavior reception, and civic assimilation (Chun, 2007; Gordon, 1964:71). Seven dimensional assimilations are observed in an orderly fashion. Widsmith (2001) summarizes the assimilation process in the following way. The first stage of assimilation is for the minority group to adopt the culture of the dominant group, for example, norms, language, and values of the dominant group. This leads to more contact between the minority and dominant group. The minority group experiences the structural assimilation, which shows similarities in educational attainment, income, occupation, and area of residence. The assimilation of the minority group further continues to include interracial marriage. The more contact between the minority and majority group of similar socioeconomic status promotes more marriage among different ethnic groups. The longer the minority group stays in the place of destination, it experiences more dimensional assimilation. The assimilation eventually results in the overall integration of the dominant and minority groups. The linear assimilation is still supported as one of best assimilation theories (Wildsmith, 2001; Alba, 1995; Alba and Nee, 1997). The recent pattern of interracial marriage of the Hispanic man and women might be an example. The U.S. born Hispanic men and women tend to show a much higher probability of finding their spouse from other races. In 2000, 34% and 32% of the U.S. born Hispanic men and women in the U.S. found their spouse from different races, but only 10% and 11% of the foreign born Hispanic men and women in the U.S. found their spouse from different races. Racal boundaries may break down more as racial minorities make socioeconomic progress and become fully incorporated into America society (Lichter and Qian, 2005: 195).

Segmented assimilation theory argues that the assimilation is a non-linear and selective progression toward Americanization. The segmented assimilation identifies various kinds of adaptations to changing circumstances (Chun, 2007; Gans, 1992). Racial boundaries are not likely to disappear quickly, as boundaries did among European white ethnics during much of the 20th century (Lichter and Qian, 2005: 195). In fact, since the mass influx of European immigrants was significantly reduced in the early 20th century, European immigrants had no choice but to find mates from other race groups. The historical immigration pattern affected the assimilation speed and process. But, the recent Hispanic immigrants have choice to find their spouse from the same ethnic group due to the continued inflow of authorized and unauthorized immigrants into the U.S. The recent Hispanic immigrants can easily stick to their origin culture because of easy accessibility

and availability. The diverse paths of immigrant assimilation are found from several examples including female headship, divorce, and non-marital fertility, behaviors, familistic beliefs on the extended family (Wildsmith, 2001; Del Castillo, 1984; Keefe and Padilla, 1987; Chapa, 1988; Portes, 1995; Portes and Zhou, 1994).

In contrast to the linear assimilation process, familism acknowledges the discrepancies in fertility, divorce, and family structure between the minority and the dominant group due to the strong cultural influences (Wildsmith, 2001; Vega, 1990; Grebler, Moore, and Guzman, 1970). Fertility rates declined slightly overall among non-Hispanic whites (from 62 births per 1,000 women in 1980 to 58 births per 1,000 women in 2005). Fertility rates among Hispanics, however, increased from 95 births per 1,000 women in 1980 to 108 per 1,000 women in 1990 before declining to 93 per 1,000 in 1998. The fertility rate has since slightly increased to 99 births per 1,000 Hispanic women in 2005. Although the very high teen birth rates among Hispanics play a role in the high fertility rate of the Hispanic population, the discrepancies in the fertility rate between the Hispanic and White women remain little changed due to the increasing number of the Hispanic immigrants.

Hispanic groups are also known to be from close contact societies (Hall, 1966; Gove et al, 1983). The family members are very close and like to gather together. They prefer large and extended family households to small and nuclear family households. Table 4 shows a changing pattern of Hispanic subfamilies in Southern California between 1980 and 2000. The proportion of subfamilies per household in Southern California slightly increased among non-Hispanic whites (from 9% 1980 to 11% in 2000). The proportion of subfamilies per U.S. born Hispanic household, however, increased from 10% in 1980 to 16% in 2000. As a result, the gap in the proportion of subfamilies per household between the U.S. born Hispanic and White households has increased during the period of 1980 and 2000. U.S. born Hispanic households maintain a similar or higher proportion of subfamilies per household than settled Hispanic immigrants. From a cross sectional perspective, the Hispanic immigrants show the decreasing pattern in the proportion of subfamilies per household by the length of stay in the U.S. but, a longitudinal perspective suggests the rapidly increasing number of subfamilies per household between 1980 and 1990. The increasing growth pattern of subfamilies stabilized between 1990 and 2000. However, the recent Hispanic immigrants tend to maintain a high proportion of subfamilies per household. The continued influx of the Hispanic immigrants into the U.S. probably enabled the U.S. born Hispanic population to maintain or renew headship, fertility, divorce, or family ties found in the place of their origin.

A recent study on Mexican female headship does not support either the linear assimilation or familism theories.(Wildsmith, 2001: 1). However, studies generally do not find substantial difference between Whites and Hispanics in household formation tendencies (Haurin and Rosenthal, 2007: 11). The current study might add additional finding on the ethnic gap in headship rates between Whites and Hispanic to the existing literature.

Table 4. Percentage of Subfamilies among Total Households by Race/Ethnicity by Nativity and the Length of Stay, Southern California, 1980-2000

	Southern California			Change in %	
	1980	1990	2000	80-90	90-00
Non-Hispanic White	9%	12%	11%	3%	-1%
Hispanic U.S. born	10%	14%	16%	4%	2%
Hispanic immigrants: 10 years less	14%	35%	30%	20%	-5%
Hispanic immigrants: 11-20 years	9%	19%	23%	11%	3%
Hispanic immigrants: 21 years or more	6%	13%	15%	7%	2%
Total	9%	14%	14%	5%	0%

Source: Author's calculations using the Integrated Public Use Microdata Series (IPUMS), 2004. Note: Weighted to population levels using person weights from the 1980, 1990, 2000 US Census

Data and Method

This study uses the individual data, Public-Use Microdata Sample (PUMS), which are computer tapes containing records for a sample of housing units, with information on the characteristics of each householder living in it. PUMS data are taken from the sample, long-form questionnaires, and so they contain the full set of data obtained by census. This paper uses the IPUMS processed by the Minnesota Population Center of the University of Minnesota (http://usa.ipums.org/usa/index.shtml). The 5-percent and 1-percent samples were used for the analysis of 1980, 1990, and 2000. An advantage of the PUMS data is that the huge sample size allows for detailed custom tabulation or other analysis (related to individual and housing related behavior) (Myers, 1992: 78-80).

Using the IPUMS, the study looks at the trends in headship rate among Non-Hispanic White, U.S. born Hispanic, and foreign born Hispanic population between 1980 and 2000. To see if the gap in the headship rates among these racial and ethnic groups reduce in Southern California five counties over time between 1980 and 2000, a binary logistic regression model is used. A binary logistic regression describes the relationship between a categorical binary response variable and a set of predictor variables (Hu, 2007, Lee et al, 2005; Menard, 2002; Pampel, 2000; Liao, 1994). The model estimates the probability of becoming a householder as a function of racial and ethnic status and other socioeconomic factors. The probability is transformed to a logit form so that there is a linear relationship between independent and the dependent variable. The logits of the unknown binomial probabilities (i.e., the logarithms of the odds) are presented in the following form.

$$\log it(Y) = \ln(\tfrac{Y}{1-Y}) = \alpha_0 + \beta_1\chi_1 + \ldots + \beta_k\chi_k = \alpha_0 + \sum_{k=1}^{k} \beta_\kappa\chi_\kappa$$

Where
Y= probability of an individual of 15 years or older to become a householder

χ_k = independent variables
β_k = estimated coefficients
α_0 = intercept

The unknown parameters β_k are usually estimated using the maximum likelihood method. β_k parameter estimate is interpreted as the additive effect on the log odds ratio for a unit change in the *k*th explanatory variable. R_L^2, which is the log likelihood R^2, is used to test the significance of the logistic model (Menard, 2002). R_L^2 is a proportional reduction in -2 log likelihood (-2LL) and is derived using the following formula: $\left[-2LogL_0 - (-2LogL_{1)}\right]/-2LogL_0$. The Wald statistics show the significance of each independent variable.

We can either interpret the model using the logit scale shown above. The odds or the probability is probably the most easily understood (Menard, 2002). We can convert the log of odds to odds such that

$$odds(Y=1) = \exp^{\log it(Y)} = \exp^{\ln[odds(Y=1)]} = \exp^{(\alpha_0+\beta_1\chi_1+\ldots+\beta_k\chi_k)}$$

Or we can convert the log of odds to the probability such that

$$p(Y=1) = \exp(\alpha_0 + \sum_{k=1}^{k}\beta_\kappa\chi_\kappa)/(1+\exp(\alpha_0 + \sum_{k=1}^{k}\beta_\kappa\chi_\kappa))$$

The odds ratios from the logistic regression are used to compare headship rates of Non-Hispanic white and Hispanic population. The odds ratio, defined as the ratio of one odds to another (also known as relative odds), is used to estimate the Hispanic headship rates relative to the Non-Hispanic white headship rates. The analysis focuses on the temporal and spatial convergence of Hispanic headship rates by nativity and the length of stay. The consistent convergence pattern of Hispanic headship rates by nativity and length of stay cross the nation over time could support the widely accepted linear assimilation theory.

To better understand the temporal change of the Hispanic headship rates by Hispanic subgroups, the Hispanic population is categorized into four different subgroups: Hispanic immigrants of 10 years or less, Hispanic immigrants of 11-20 years, Hispanic immigrants of 21 years or more, and U.S. born Hispanic population. The classification of the Hispanic population used in the study allows us to understand the change in headship rates relative to the Non-Hispanic White headship rates during the life stage of Hispanic immigrants in the U.S. from the longer time perspective. The study includes four Hispanic subgroups as dummy variables, and Non-Hispanic white population as a reference variable.

The net racial and ethnic effect on the headship rate can be measured after controlling for significant socioeconomic factors, which include age, sex, marriage status, educational

attainment. The census region is included only in the US model. The previous research widely discussed the role of age, marriage, presence of children, and age distribution in determining the headship rate (Haurin and Rosenthal, 2007; Goldscheneider and Goldscheneider, 1993; Goldscheneider and Devanzo, 1989; Goldscheneider et al, 1993; Haurin et al, 1993, 1997; Masnick, 2001a, 2001b).

First, age represents different stages of family life cycle: 1) independence, 2) coupling or marriage, 3) parenting: babies through adolescents, 4) launching adult children, 5) retirement or senior years (http://www.peacehealth.org/kbase/topic/special/ty6171/sec1.htm). Each stage of family life cycle represents different household formation level. The older a householder is, the higher headship rates are. In 2000, Headship rates range from 10% of householder's age 15-24 to 67% of householder's age 75+ across different age groups (See Table 5). Age is categorized into 7 groups, usually in 10 year increment, beginning with 15-24 and ending with 75+. Age groups of 25 years old or more are coded as dummy variables, while an age group of 15-24 is coded as a reference variable (See Table 6).

Second, gender becomes a more important factor in determining headship. The male household member was traditionally a householder or a head of a household. The male householder had primary authority and responsibility for household affairs, in particular, economic support. Most of family households voluntarily define a male household as a householder (a head of a household). With a changing pattern of household type, we see more non-family households or single parent family households, with an overall effect on the headship rates of female populations (See Table 5). Male householder is coded as dummy variable, while female householder is coded as a reference variable (See Table 6).

Third, marriage status also affects headship. An individual of a younger age group tends to belong to a household as a household member rather than a head of a household (a householder), as soon as they become independent from parents. The person might live in a separate housing unit with classmates or roommates. The probability of those people to become a householder goes up, as they get old and married. A person might be divorced or separated with children. He or she has more probability to become a householder (See Table 5). Householders, who were currently marred or married once, are coded as dummy variables, while a single (not-married) householder is a reference variable (See Table 6).

Fourth, individuals of higher socioeconomic status tend to have more tendencies to form households. Educational attainment is understood to be a better indicator than income variable (Haurn et al, 2007, 1994; Stephen and Bean, 1992; Bean et al, 1996;Frisbie, 1986). The person of a higher educational attainment tends to have higher probability of becoming a head of a household (a householder) (See Table 5). Although income is conceptually a good indicator to measure household formation difference, it can not used because of its endogenous nature. Hauerin et al (2007) indicates,

> "A 20 year old with a very high family income, for example, likely is still living with the parents, while a 20 year old with little family income is more likely to have already left the parents' home and be a household head."

Educational attainment is categorized into 4 types: less than high school, high school graduate, some college, and college graduate. Householders of the first three types are coded as dummy variables, while a college graduate householder is a reference variable (See Table 6).

Fifth, the cost of independent living affects the household formation behavior (Haurin and Rosenthal, 2007; Haurin et al, 1993, 1997; Ermisch and DiSalvo, 1997; Ermisch, 1999). This cost of living is measured using the cost of renting and home purchases in the local area. The relatively higher cost would result in the lower headship. This study includes the Census region in the list of independent variables to reflect the different housing costs across the nation for the US model.

Table 5. Headship Rates by Age, Gender, Marriage Status, and educational Attainment, Southern California, 1980-2000

	1980	1990	2000	Change in headship rates	
				80-90	90-00
Age					
15-24	0.1722	0.1192	0.0980	-0.053	-0.021
25-34	0.5095	0.4295	0.4080	-0.080	-0.022
35-44	0.5694	0.5387	0.5127	-0.031	-0.026
45-54	0.5767	0.5708	0.5569	-0.006	-0.014
55-64	0.6020	0.5955	0.5757	-0.006	-0.020
65-74	0.6404	0.6311	0.6108	-0.009	-0.020
75+	0.6940	0.6901	0.6745	-0.004	-0.016
Gender					
Female	0.2611	0.2715	0.2873	0.010	0.016
Male	0.7146	0.6330	0.6006	-0.082	-0.032
Marriage Status					
Single	0.2769	0.2603	0.2722	-0.017	0.012
Currently married	0.4894	0.4711	0.4616	-0.018	-0.010
Married once	0.7647	0.7214	0.6896	-0.043	-0.032
Educational Attainment					
Less than high school	0.3914	0.3316	0.3206	-0.060	-0.011
High school	0.4533	0.4160	0.4043	-0.037	-0.012
Some college	0.5262	0.4950	0.4901	-0.031	-0.005
College	0.6674	0.6254	0.6055	-0.042	-0.020

Source: Author's calculations using the Integrated Public Use Microdata Series (IPUMS), 2004. Note: Weighted to population levels using person weights from the 1980, 1990, 2000 US Census.

Table 6. Description of Independent and Dependent Variables

Variable		Description
Dependent Variable		
Headship rate		Probability of a person to become a householder
Independent Variable		
Nativity or Immigration Status	Non-Hispanic White	Reference
	U.S. born Hispanic	1 for yes, 0 for no
	Length of stay in the U.S.: 0-10 years	1 for yes, 0 for no
	Length of stay in the U.S.: 11-20 years	1 for yes, 0 for no
	Length of stay in the U.S.: 21+ years	1 for yes, 0 for no
Sex	Male	1 for yes, 0 for no
	Female	Reference
Educational Attainment	Less than high school	1 for yes, 0 for no
	High school	Reference
	Some college	1 for yes, 0 for no
	College	1 for yes, 0 for no
Age	Age 15-24	Reference
	Age 25-34	1 for yes, 0 for no
	Age 35-44	1 for yes, 0 for no
	Age 45-54	1 for yes, 0 for no
	Age 55-64	1 for yes, 0 for no
	Age 75+	1 for yes, 0 for no
Marriage Status	Never married	Reference
	Currently Married	1 for yes, 0 for no
	Married at least once	1 for yes, 0 for no
Census Region	New England	Reference
	Middle Atlantic	1 for yes, 0 for no
	East North Central	1 for yes, 0 for no
	West North Central	1 for yes, 0 for no
	South Atlantic	1 for yes, 0 for no
	East South Central	1 for yes, 0 for no
	West South Central	1 for yes, 0 for no
	Mountain	1 for yes, 0 for no
	Pacific	1 for yes, 0 for no

Source: Author's coding using the Integrated Public Use Microdata Series (IPUMS), 2004.

Table 7. Descriptive Statistics

	Southern California					
	1980		1990		2000	
	Mean	SD	Mean	SD	Mean	SD
Headship	0.480	0.500	0.447	0.497	0.443	0.497
Race/Ethnicity by Nativity (Non-Hispanic White)						
Hispanic U.S. born	0.114	0.318	0.121	0.327	0.169	0.374
Hispanic immigrants: 10 years less	0.075	0.264	0.117	0.322	0.096	0.294
Hispanic immigrants: 11-20 years	0.035	0.184	0.074	0.262	0.111	0.314
Hispanic immigrants: 21 years or more	0.019	0.137	0.043	0.203	0.099	0.298
Age (15-24)						
25-34	0.231	0.422	0.245	0.430	0.211	0.408
35-44	0.154	0.361	0.192	0.394	0.211	0.408
45-54	0.130	0.337	0.127	0.333	0.160	0.366
55-64	0.124	0.329	0.101	0.302	0.098	0.298
65-74	0.080	0.271	0.082	0.275	0.071	0.257
75+	0.049	0.216	0.052	0.223	0.062	0.241
Gender (Female)						
Male	0.483	0.500	0.495	0.500	0.493	0.500
Marriage Status (Single)						
Currently married	0.566	0.496	0.541	0.498	0.524	0.499
Married once	0.170	0.376	0.170	0.376	0.172	0.377
Educational Attainment (High school)						
Less than high school	0.329	0.470	0.278	0.448	0.287	0.453
Some college	0.209	0.406	0.278	0.448	0.268	0.443
College or more	0.150	0.357	0.176	0.381	0.188	0.391
Number of Observations	74,263		88,670		89,884	

Source: Author's coding using the Integrated Public Use Microdata Series (IPUMS), 2004.

Results

The model results indicate that the regional Hispanic headship rates generally do not converge toward the White headship rates between 1980 and 2000. Although the Hispanic immigrants experience a linear assimilation toward the Non-Hispanic white headship over time, U.S. born Hispanic residents do not experience a linear assimilation toward the Non-Hispanic white headship.

The odds ratios from the logistic regression are used to compare headship rates of Non-Hispanic white and Hispanic population (See Table 7). According to the estimated odd ratios from a logistic regression model of headship in Southern California, 1980-2000, Hispanic headship rates do not linearly converge toward the Non-Hispanic white headship rates. First, using the cross sectional perspective, for each of three census years, Hispanic immigrants generally show a convergence of their headship rates toward Non-Hispanic white headship rates according to the length of their stay in the U.S., while the

children of Hispanic immigrants or U.S. born Hispanic population do not show a convergence of their headship rates toward Non-Hispanic white headship rates and settled Hispanic immigrants of 20 years or longer stay in the U.S. In 2000, the gap in headship rates was especially distinct between the Non Hispanic white population and the recent Hispanic immigrants of 10 years or less stay in the U.S., the former of which were 2.1 times more likely to be householders. Compared with the U.S. born Hispanic population, Non-Hispanic white populations are 1.3 times more likely to be householders.

Second, using the longitudinal perspective, Hispanic immigrants and the children of Hispanic immigrants or U.S. born Hispanic population do not show a convergence of their headship rates toward Non-Hispanic white headship rates between 1980, 1990, and 2000. The settled Hispanic immigrants, stayed in the U.S. for more than 11 years, maintained the similar odds ratio against Non Hispanic white headship rates over time. The recent Hispanic immigrants experienced the biggest decrease of their odds ratio against Non-Hispanic white headship rates between 1980 and 2000. They reduced their odd-ratio by 40% from 0.81 in 1980 to 0.48 in 2000.

Third, using the cohort perspective, Hispanic immigrants generally show a convergence of their headship rates toward Non-Hispanic white headship rates according to the length of their stay in the U.S. For example, the odd ratio of a cohort of Hispanic immigrants, who came to the U.S. between 1970 and 1980, increased from 0.81 in 1980 to 0.94 in 1990, and to 0.98 in 2000. Hispanic immigrants tend to increase their headship rates over time to be close to the Non-Hispanic white headship rates.

Fourth, the pattern of the estimated odds ratios of Hispanic headship rates from Southern California model is generally consistent with those of the US model, which incorporates the regional variation associated with the cost of independent living.

The findings from the study partly support the linear assimilation theory. The changing pattern of the headship rates of Hispanic immigrants might be overall explained by the linear assimilation theory. But, the increasing gap in the U.S. born Hispanic headship rates and the Non-Hispanic headship rates can not be explained by the linear assimilation theory, but might be partly explained by familism theory. In many Latin American cultures, extended families are the basic family unit (http://en.wikipedia.org/wiki/Extended_family). Extended families can include spouses of children, cousins, aunts, uncles, and foster children/adopted children etc. as well as parents and their children. The extended family tradition might be an important element leading to lower headship rates of the U.S. born Hispanic population relative to Non-Hispanic white population after controlling for the significant socioeconomic variables. The extended family tradition weakens as the Hispanic immigrants stay longer in the U.S., but it remains strong or becomes stronger among the U.S. born Hispanic population over time.

Table 8. Estimated odds ratios from a logistic regression model of headship of Southern California and United States, 1980-2000

	Southern California			United States		
	1980	1990	2000	1980	1990	2000
Race/Ethnicity by Nativity (Non-Hispanic White)[b]						
Hispanic U.S. born	0.905	0.808	0.784	1.074	0.909	0.886
Hispanic immigrants: 10 years less	0.808	0.536	0.484	0.781	0.586	0.543
Hispanic immigrants: 11-20 years	1.084	0.944	0.976	0.936	0.933	0.988
Hispanic immigrants: 21 years or more	**0.989**	**1.012**	0.980	0.950	1.036	1.035
Age (15-24)						
25-34	5.265	4.701	5.813	4.776	5.361	5.157
35-44	6.860	6.431	8.035	6.124	7.098	6.724
45-54	7.572	7.328	8.683	7.074	8.353	7.359
55-64	8.580	8.541	9.380	8.795	10.026	8.783
65-74	10.313	10.185	11.245	11.697	13.368	11.424
75+	10.650	12.205	14.105	10.455	16.491	14.779
Gender (Female)						
Male	22.255	10.978	6.704	38.284	17.605	10.866
Marriage Status (Single)						
Currently married	1.451	1.437	1.124	2.276	1.358	0.952
Married once	14.170	7.884	4.234	33.879	12.988	6.667
Educational Attainment (High school)						
Less than high school	0.691	0.818	0.841	0.653	0.753	0.698
Some college	1.349	1.429	1.416	1.328	1.385	1.382
College or more	1.806	2.014	1.877	1.876	1.924	1.803
Census Region (New England)						
Middle Atlantic				0.980	0.978	0.980
East North central				1.101	1.079	1.080
West North Central				1.196	1.189	1.144
South Atlantic				1.035	1.028	1.003
East South Central				1.090	1.115	1.111
West South Central				1.140	1.120	**1.090**
Mountain				1.126	1.108	1.035
Pacific				1.089	0.969	0.921
Number of Observations	74,263	88,670	89,884	1,435,219	1,627,660	1,795,199
R_L^2	0.374	0.301	0.251	0.434	0.349	0.290

Source: Author's calculations using the Integrated Public Use Microdata Series (IPUMS), 2004. Notes: [a] reference categories are in parenthesis. Weighted to population levels using person weights from the 1980, 1990, and 2000 Census. All estimated odds ratios are significant at $p < 0.01$. Other estimated odds ratios in bold letters are not significant at $p < 0.05$.

Discussions

The SCAG's current practice of developing the 30 year projection of Hispanic households is based on the assumption that Hispanic headship rates converge towards the White headship rate by 25 percent of the difference from the 2000 Census White headship rate (Southern California Association of Governments, 2007). Given the historically increasing difference in the White and Hispanic headship rates between 1980 and 2000, the convergence pattern of Hispanic and Non-Hispanic white headship rates might not be a valid, but a normative, assumption.

Information on the converging pattern of headship rates of Hispanic immigrants toward the white headship rates or the diverging pattern of headship rates of US born Hispanic population against the white headship rates has important implications for projecting more accurate Hispanic households by immigration status. The converging or diverging pattern can be factored in developing projections of Hispanic households. Household projections are composed of the following three elements: 1) assumption of the headship rates of Non-Hispanic white population, 2) assumption of the future relationship in headship rates between Non-Hispanic white population and US born Hispanic population (or Hispanic immigrants by the length of stay), and 3) projection of the population size of US born Hispanic population and Hispanic immigrants by the length of stay.

In addition to headship rates, the projected size of Hispanic population by age, gender, and the length of stay, becomes an important element in developing Hispanic household projection. The increasing share of settled Hispanic immigrants and the US born Hispanic population is directly factored in developing the future size of Hispanic households. If other things equal, the increasing share of settled Hispanic immigrants would result in more Hispanic households, while the increasing share of US born Hispanic population would not. The new approach might result in projections of Hispanic households by nativity and the length of stay, but might not guarantee more accurate projection of Hispanic households due to uncertainties underlying the projection of population by nativity and the length of stay (See Table 8). The cohort-component model is used to project Hispanic population by detailed demographic characteristics. The major process is to develop assumptions of births, deaths, and migration for detailed age, gender, and subgroups. There has been an effort to apply the new approach to population projection at the national level (Myers et al, 200X). Its application to population projection at the smaller level of geography is not popular due to the complexity of developing demographic assumptions. Projection of domestic migration of Hispanic population by age, gender, and nativity and the length of stay might be the most challenging process as the available data are limited at the small level of geography.

Table 9. Comparison of the Existing Approach and the New Approach

Race/Ethnicity	Existing Approach	New Approach
Non-Hispanic White	• Population projection • Headship rates	• Same as the existing approach
Hispanic	• Population projection • Headship rates	• Population projection by nativity and the length of stay • Headship rates by nativity and the length of stay

With a diverging and decreasing pattern of US born Hispanic headship rates and recent Hispanic immigrants, table 9 presents a range of effects of different assumptions of the share of the recent and settled Hispanic immigrants and the US born Hispanic headship rates on household projections. For example, with 1% deduction in the headship rates from the baseline headship rates, US born Hispanic households will be 21,000 lower than that of the baseline household projections. 1% reduction in the share of recent immigrant households with 1% increase in the share of settled immigrant households would result in 30,000 additional household projections. Unless there is a big reduction in headship rates or the share of recent immigrants over time, their impact on the number of projected households is not significant.

Table 10. An Illustrative Example of Household Projections with Different Reductions in the Share of the Recent Hispanic Immigrants and the US Born Hispanic Headship Rates.

	Baseline	1%	2%	3%	4%	5%
US born Hispanic households	621,904	601,124	580,344	559,564	538,785	518,005
Difference from baseline		(20,780)	(41,559)	(62,339)	(83,119)	(103,899)
Hispanic immigrant households	1,366,810	1,397,124	1,427,439	1,457,754	1,488,069	1,518,383
Difference from baseline		30,315	60,630	90,944	121,259	151,574
Total Hispanic households	1,988,713	1,998,248	2,007,783	2,017,318	2,026,853	2,036,388
Difference from baseline		9,535	19,070	28,605	38,140	47,675

Conclusions

This study tests if there is the convergence of headship rates between White and Hispanic population in the Southern California region during the period of 1980 and 2000. Using Integrated Public Use Microdata Series (IPUMS) of the decennial census, the changing gap of the White and Hispanic headship rates is measured for each census year, over time, and across generations in order to test a linear assimilation theory.

The study finds that the gap of the White and Hispanic headship rates were generally growing over time and across generations, after controlling for socioeconomic factors. In particular, Hispanic immigrants experience a linear assimilation toward the Non-Hispanic white headship rates over time, while U.S. born Hispanic residents do not show a linear

assimilation toward the Non-Hispanic white headship rates. The findings from the study partly support the linear assimilation theory. The changing pattern of the headship rates of Hispanic immigrants might be fully explained by the linear assimilation theory. But, the increasing gap in the U.S. born Hispanic headship rates and the Non-Hispanic headship rates might be partly explained by familism theory. The extended family tradition plays a key role in familism theory, and might account for the lower headship rates of the U.S. born Hispanic population. The regional assimilation pattern is not simply location specific but a national experience.

The converging pattern of headship rates of Hispanic immigrants toward the white headship rates or the diverging pattern of headship rates of US born Hispanic population against the white headship rates has important implications for projecting Hispanic households. If other things equal, the increasing share of settled Hispanic immigrants would result in more Hispanic households, while the increasing share of US born Hispanic population would not. The new approach, which requires projection of Hispanic population and headship rates by nativity and the length of stay, might develop more accurate projections of Hispanic households by immigration status, but might result in more uncertainties due to the increased number of projection variables.

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